



**City of Santa Barbara
Integrated Pest Management Strategy**

2007 Annual Report

Prepared February 2008



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I. INTRODUCTION

In January 2004, the City of Santa Barbara (City) adopted a jurisdiction-wide Integrated Pest Management (IPM) Strategy. The City's IPM Strategy was developed to help reduce pesticide hazards on City property and promote effective pest management. This 2007 IPM Annual Report is the fourth Annual Report for the program.

The IPM Strategy requires that an Annual Report be prepared. The Annual Report addresses each of the following areas:

- Types of pest problems that each Department has encountered
- Types and quantities of pesticides used by each Department
- Exemptions currently in place and granted during the past year
- Alternatives currently used for phased out pesticides
- Alternatives proposed for adoption within the next 12 months
- Effectiveness of any changes in practice implemented
- Planned changes to pest management practices

In addition to the areas described above, the 2007 Annual Report discusses the Pesticide Hazard And Exposure Reduction (PHAER) Zone System adopted by the City Council in February 2006.

Integration of the PHAER Zone System

The IPM Strategy required the development of a "Zone System" tied to the IPM Approved Materials List to limit pesticide use based on potential human exposure. In February 2006, the City Council adopted the PHAER system to be incorporated into the IPM Strategy.

The PHAER system assigns Green, Yellow, or a Special Circumstance/Red Zone designation to sites, or portions of sites, based upon the potential for exposure by humans and sensitive habitat to hazardous pesticides, and allows use of carefully screened materials by zone designation. For example, Green Zones are areas of high exposure potential, and only pesticides designated as "Green", which show very limited human and environmental impacts, may be used. Yellow Zones are areas with less potential for harm from exposure, and a broader range of "Yellow" materials are permitted. Under the PHAER Zone system, The Parks and Recreation Department has determined that 98% of the City's parkland can be managed Green. This relates to 1,449.8 of the 1,476 acres of parkland maintained by Parks and Recreation. The change in tracking and reporting pesticide use from the Tier system (Tiers 1, 2, 3, and 4) used in the 2004 and 2005 reports, to the PHAER Zone color system (Green, Yellow, and special circumstance / Red) used currently, has required some adjustments to the reporting methods used in the 2006 and this 2007 report.

As a management tool in applying the PHAER Zone system, the Parks and Recreation Department assembled and equipped a dedicated crew to provide some of the labor necessary in pursuing the specific alternative practices and goals included in the PHAER Zone.

Citizen and Staff IPM Advisory Committees

The Staff IPM Committee continued to work effectively with the Citizen IPM Advisory Committee to administer the IPM Strategy, and oversee pest management practices. In 2007 the Citizen IPM Advisory Committee met 6 times to discuss and act on IPM policies and practices and made site visits to the Harbor, Moreton Bay Fig Tree, and Shoreline Park to inspect pest damage and see the work that Staff was doing. The 2007 Citizen IPM Advisory Committee included the following representatives: Eric Cardenas from the Environmental Defense Center (EDC), Greg Chittick, community at large, Oscar Carmona, community at large, Kristen LaBonte, community at large, and Brenton Kelly from the Pesticide Awareness and Alternative Coalition (PAAC). Brenton Kelly finished his term at the end of 2007. A new committee member will be selected to represent PAAC beginning in 2008.

Department IPM Coordinators are appointed by Department Heads to serve on the Staff IPM Committee. Department representatives were: Jeff McKee from the Airport, Michele Decant from Community Development, Russ Cole from the Fire Department, Mike Grimes from Public Works, Judd Conley from the Waterfront, and Santos Escobar, serving as the IPM Coordinator, from Parks and Recreation

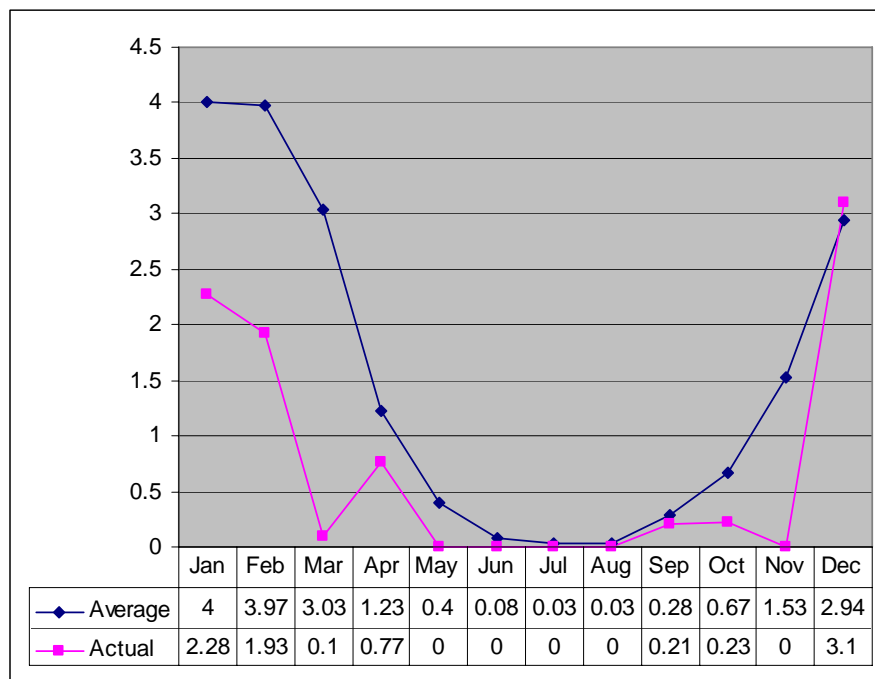
IPM Advisory Committee Dissentions

In 2007, there was no IPM Advisory Committee dissention. A dissention is when a vote is not unanimous.

II. 2007 PROGRAM SUMMARY

In the fourth year of the IPM program, a record dry year enabled a drop in pesticide use due to diminished weed and mosquito populations. Overall, the City had a 51% decrease in pesticide use from 2006 to 2007. This includes an 87% decrease in the use of Red materials. The use of Yellow materials also decreased 39%. The use of Green materials decreased 92%. The IPM Strategy favors the use of Green materials, however, the dry weather in 2007 reduced the need for the Green material Bti for mosquito control, affecting a significant drop in the use of Green materials this year. The graph below shows the significantly low rainfall of 8.62 inches against the historical average of 18.19 inches. The abnormal dryness of 2007 inhibited the proliferation of many common pests throughout the City.

2007 Rainfall Chart



It is important to note that because pesticide use will vary from year to year, an increase or decrease from the previous year does not necessarily indicate a long-term trend. Many factors affect the amount of pesticides applied in any one year.

One of the main factors that determine pest populations is rainfall. The more rain the area receives in a year, the greater the population of insects and weeds. Compared to the low rainfall in 2007, a normal or wet year in 2008 would generally affect the amount of material use.

City-Wide

- The units of pesticides applied decreased by 51% from 2006 to 2007.
- Units of Green materials decreased by 92%.
- Units of Yellow materials decreased by 39%.
- Units of Red materials decreased by 87%.
- Reductions were due predominantly to a record dry year.
- While total quantities decreased, the number of times pesticides were applied (including Green, Yellow, and Red materials) increased by 19%, due predominantly to Departments utilizing materials that are applied in smaller quantities, but with more frequency.

Airport Department

- The units of pesticides applied decreased by 39% from 2006 to 2007.
- Because of low rainfall in 2007, applications of mosquito control products decreased 42%.
- Applications of Ditrac (a Yellow material) for rodent control increased in 2007. The Airport Department implemented a plan to substantially decrease applications for 2008.
- A small amount of Fumitoxin (a Red material) was applied in 2007 to control rodents on the airfield as approved through the exemption process.
- During construction of the runway safety area, additional airfield light lanes were paved. This change is expected to reduce future herbicide applications.
- Substantially increased man-hours were devoted to alternative efforts for weed control. Alternative efforts were concentrated in maintaining Airport native habitat restoration areas.
- Contractors working for the Airport applied 8oz of Drione (a Red material) in Airport buildings in 2007 without an exemption. The Airport regrets this error and is committed to the City of Santa Barbara's IPM Program. Adjustments have been made to contracting practices in order to avoid such oversights in the future.

Creeks Division, Parks and Recreation Department

- No pesticides were applied in 2007.
- 50 yards of mulch was spread.

Golf Division, Parks and Recreation Department

- The units of pesticides applied decreased by 56% from 2006 to 2007.
- The Golf Division purchased a new, larger and more efficient, compost spreader that is shared with the Parks Division and the Santa Barbara School District. This enabled an increase in both the volume on compost applied and the effectiveness of top-dressing turf.
- The Golf Division continued the use of compost tea and began brewing effective microorganisms on-site for application on golf greens.
- Material use decreased 56%, with a 93% reduction of Red materials and a 17% increase in Yellow materials.

Parks Division, Parks and Recreation Department

- The units of pesticides applied decreased by 33% from 2006 to 2007.
- Units of Green materials decreased by 56%.
- Units of Yellow materials decreased by 39%.
- No Red materials were used in 2007.
- 5,687 lineal feet of curbing installed in parks to reduce weed spread.
- Over 2000 yards of mulch spread.

Public Works Department

- The units of pesticides applied decreased by 99% from 2006 to 2007.
- Units of Green materials decreased by 99%.
- Units of Yellow materials decreased by 99%.
- No Red materials were used in 2007.
- Reductions were due almost entirely to record low rainfall in 2007, resulting in decreased mosquito populations.
- Public Works applied 36oz. of Round-up (a Yellow material) on traffic medians in 2007 without an exemption. Public Works regrets this error and is committed to the City of Santa Barbara IPM Program. Adjustments have been made to management practices in order to avoid such oversights in the future.

Waterfront Department

- The units of pesticides applied decreased by 40% from 2006 to 2007.
- The only pesticide applied at the Waterfront was Ditrac (a Yellow material) for the control of rats. Ditrac use decreased from 105 pounds in 2006 to 63 pounds in 2007.

III. PEST PROBLEMS ENCOUNTERED

A variety of pests were encountered on City properties in 2007 as outlined in the table below. Departments ranked their top three pest problems with the numbers 1, 2 and 3. Other pest problems encountered are checked (✓). Footnote annotations reference additional information.

Pest Problems Encountered Table

		Airport	Creeks	Golf	Parks	Parking	Public Works	Waterfront
Plant pests	Giant whitefly			✓	✓	✓	✓	
	Misc. plant insects			2 ¹	✓ ⁴	3		
	Disease			1 ²	✓ ⁵	✓		
Specimen Tree Pests	Oak Worm	✓		✓	✓	2		
	Psyllids			✓	✓			
Weeds	Invasives	✓	✓	3 ³	1 ⁶			
	General weeds	3	✓	✓	1	1	✓	3
	Perennial grasses	✓	✓	✓	1 ⁷		✓	✓
Vertebrates	Gopher	2		✓	2		✓	✓
	Ground Squirrel	✓	✓	✓	1			✓
	Gulls/ nuisance birds	✓		✓	✓	✓		2
	Moles			✓	✓			
	Raccoons			✓				
	Skunks			✓				
Human Health	Poison Oak	✓			✓			
	Bees, yellow jackets, etc.			✓	3	✓	2	
	Rats/ mice	✓		✓	✓	✓	3	1
	Mosquitoes	1			✓		1	
Other	Termites	✓					✓	
	Roaches						✓	
	Pigeons	✓					✓	
	Crows	✓		✓				
	Ants	✓						

1. Golf reported these insect pests: Black Turfgrass Ataenius Beetle (Grubs).
2. Golf reported these plant diseases (fungus): Dollar Spot, Pink Snow Mold, Anthracnose, Summer Patch, and Yellow Patch.
3. Golf reported this invasive weed: Clover.
4. Parks reported these plant insects: Lerp Psyllids, Mites, Oak Moths, Thrips, Aphids, Snails, Slugs, and Ants.
5. Parks reported these plant diseases: Leaf Spot, Mildew, Blight, Pink Bud Rot, Sooty Mold, Pythium, Armillaria, and Phytothora.
6. Parks reported these invasive weeds: Arrundo, Nutgrass, Kikuyu Grass, Clover, Oxalis, Malva, Foxtail, Spurge, Dandelion, Milkweed, Sow Thistle, Poa annua, Puncture Vine, Johnson Grass, and Poison Oak.
7. Parks reported the following perennial grasses: Crab, and Bermuda.

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IV. TOTAL PESTICIDE USE

Data has been collected for City-wide pesticide application since 2004. However, data is available for the Golf Division for the last 6 years and for the Parks Division for the last 9 years. This data is plotted in the graphs on subsequent pages which depict the various reductions and increases in pesticide use by each Department. A City-wide narrative is provided as well as one for each Department describing the particular pest issues faced this year, followed by a graph depicting pesticide use.

There are a number of factors that affect pesticide use. These include weather patterns (unseasonably dry or wet weather), introduction of new, or changes to existing pest populations, and changes in the effectiveness or availability of pesticide materials

It should also be noted that due to the change in 2006 from the Tier system to the PHAER system of pesticide classification, the graphs will show an expanded data list beneath each chart. This data list is based on the PHAER system of pesticide classification and is valid for the 2006 and 2007 columns only. The Tier system is included for prior years to provide historical data.

As the program continues into its fifth year, and the City increases its commitment to Green materials, it is likely that the volume of pesticides applied will increase. Green materials require higher application levels than high risk pesticides. However, a rise in Green material use, though it increases the over-all pesticide use in the City, will generally mean a reduction in the application of higher risk Yellow and Red materials.

City-wide Pesticide Use

City-wide pesticide use decreased substantially in 2007, mainly because of minimal rainfall. Pesticides applied decreased by 51% from 2006 to 2007. The use of Green materials decreased by 92%, Yellow materials by 39%, and Red materials by 87%.

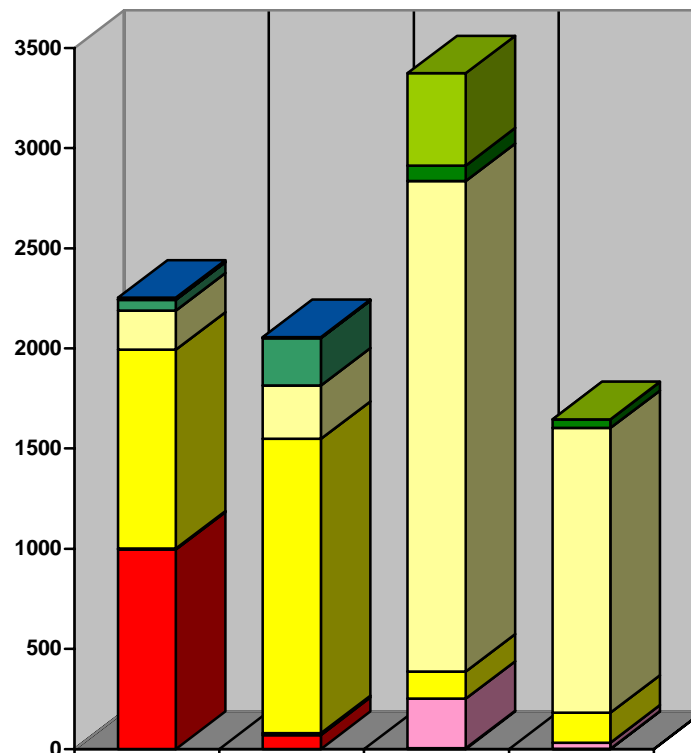
The table below provides a summary of the pesticides applied on City property in 2007. Pesticides are reported in either pounds or gallons depending on if they are dry or liquid. The column labeled "Type" includes the type of pesticide applied: Insecticide, Fungicide, Herbicide, Molluscicide, and Rodenticide. The data used to generate the total overall pesticide use is based upon total units (gallons or pounds) of all materials.

City Departments who applied pesticides, or contracted with pesticide applicators, prepared monthly pesticide and alternative use reports, and participated in the preparation of this Annual Report. The monthly reports form the basis of the Annual Report and are available at the main offices of each Department.

Total Pesticide Use Table

Pesticide	Type	Amount of Pesticide Applied										Number of Applications				
		Airport		Golf		Parks		Public Works		Waterfront		Airport	Golf	Parks	Public Works	Waterfront
		Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds	Gallons	Pounds					
Bti Summit	Insecticide								0.5						8	
Burnout II	Herbicide	31.25				7.15						3		4		
Lime Sulfur	Fungicide					2								1		
Safer Soap	Insecticide					2.56								5		
Green Totals		31.25	0	0	0	11.71	0	0	0.5	0	0	3	0	10	8	0
Altosid	Insecticide		1,152.70									18				
Ditrac	Rodenticide		197.25								63	107				12
Dormant Oil	Fungicide					2								1		
M-Pede	Insecticide							1.1							16	
Neem Oil	Fungicide					1.44								4		
Round-up Pro	Herbicide	88.65		1.94		2.27		0.28				22	5	24	18	
Surflan	Herbicide	51.4										10				
Wilco Squirrel Bait	Rodenticide				9								3			
Yellow Totals		140.05	1349.95	1.94	9	5.71	0	1.38	0	0	63	157	8	29	34	12
Drione	Insecticide		0.5									1				
Fumitoxin	Rodenticide		30.06									2				
Medallion	Fungicide			0.75									2			
Merit	Insecticide			0.25									2			
Scimitar	Insecticide			0.25									1			
Red Totals		0	30.56	1.25	0	0	0	0	0	0	0	3	5	0	0	0
Department Totals		171.3	1380.51	3.19	9	17.42	0	1.38	0.5	0	63	163	13	39	42	12
City-wide Totals		Gallons 193.29					Pounds 1,453.01					Applications 269				

City-wide Pesticide Use



	2004	2005	2006	2007
PHAER				
Green Pounds			489.05	.5
Green Gallons			48.5	42.96
Yellow Pounds			2449.91	1,421.95
Yellow Gallons			135.65	149.08
Red Pounds			246.93	30.56
Red Gallons			3.75	1.25
History				
Tier 4 Gallons				
Tier 4 Pound	9	3.4		
Tier 3 Gallons	1.1	1.25		
Tier 3 Pounds	54	236.54		
Tier 2 Gallons	195.5	267.04		
Tier 2 Pounds	992	1469.03		
Tier 1 Gallons	5.5	9		
Tier 1 Pounds	995.9	70		
Totals	2253	2056.26	3373.79	1645.52
Percentage	Down 51%			

Parks Division Pesticide Use

The Parks Division saw a 63% overall decrease in materials used throughout 2007, with a 39% decrease in Yellow materials and a 29% decrease in Green materials. No Red materials were used this year on any parkland.

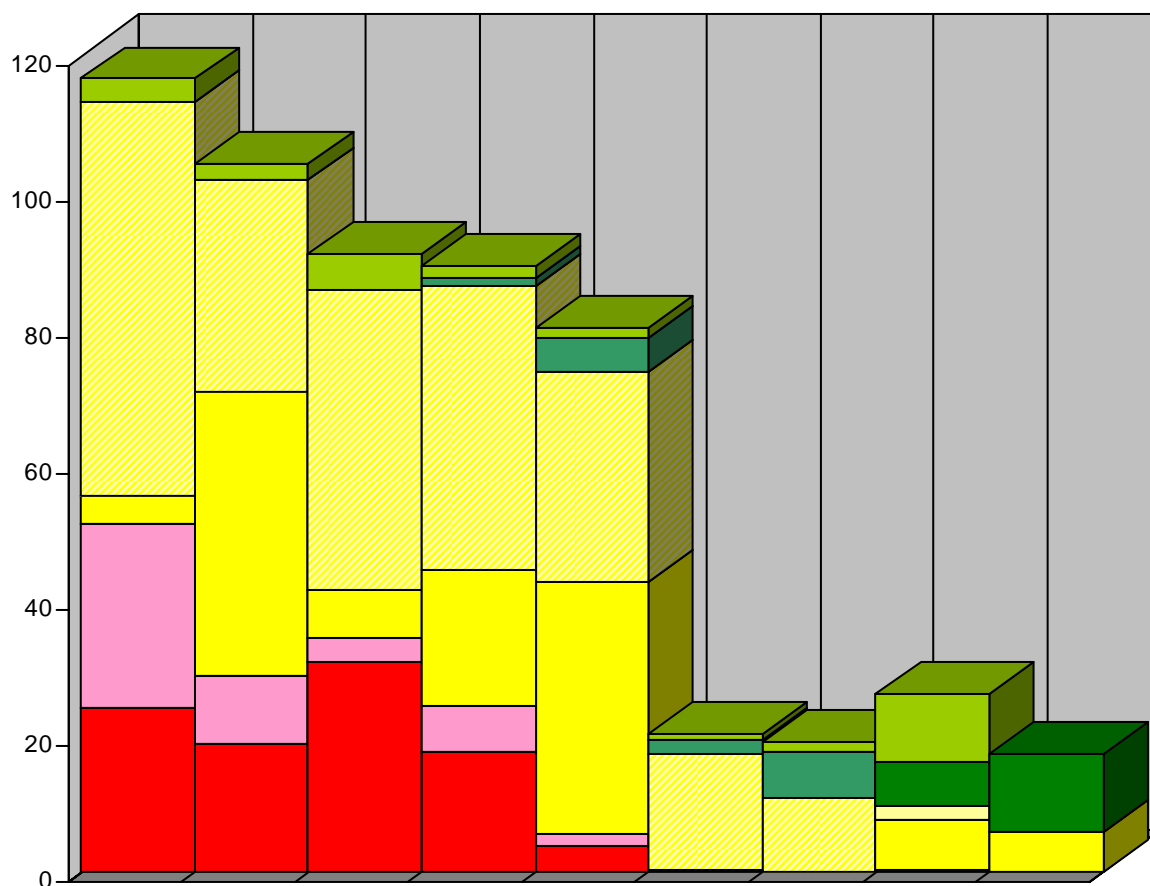
Alternatives Used

The Parks Division used a number of Green materials as alternatives to Yellow or Red classified chemicals. Burnout II was used at many sites for temporary weed kill in place of Round-Up. Lime sulfur was applied as a dormant spray to the A.C. Postel Memorial Rose Garden. *Bacillus thurengiensis* var. *israelensis* (Bti) was applied for Oak Moth Worm instead of the traditional Yellow materials.

The Parks Division also saw a decrease in spring weeds due to abnormally low rainfall. Much of the resulting weed control was achieved with mulching and manual or mechanical weeding, as well as an increased tolerance of weeds. In addition, clove oil based Green materials were used for weed control in areas that would have previously been treated with Round-Up, a Yellow material.

A focused project was accomplished at Alice Keck Park Memorial Garden. In preparation for the installation of a new butterfly habitat, an existing planter area that was thoroughly inhabited by weeds was treated with the clove oil based Green herbicide Burn-out II. The Parks Division opted to try this material in lieu of using Round-up to eradicate the weeds. The material was applied 3 times at increasing concentrations but never achieved a true eradication. The material proved effective as a temporary burn-down of sensitive weeds, but ultimately, physical removal of all the topsoil was necessary.

Parks Division Pesticide Use



	1999	2000	2001	2002	2003	2004	2005	2006	2007
PHAER									
Green Pounds								10	
Green Gallons								6.5	11.71
Yellow Pounds								2	
Yellow Gallons								7.43	5.71
Red Pounds									
Red Gallons								0.25	
History									
Tier 4 Gallons									
Tier 4 Pound									
Tier 3 Gallons	3.4	2.5	5.3	1.75	1.5	1	1.25		
Tier 3 Pounds				1	5.05	2	7		
Tier 2 Gallons	58	31	44	42	31	17	10.71		
Tier 2 Pounds	4	42	7	20	37				
Tier 1 Gallons	27.3	9.8	3.6	6.7	1.7	0.22			
Tier 1 Pounds	24	18.9	30.91	17.6	3.8				
Totals	116.7	104.2	90.81	89.05	80.05	20.22	18.96	26.18	17.42
Percentage							Down 33%		

Golf Division Pesticide Use

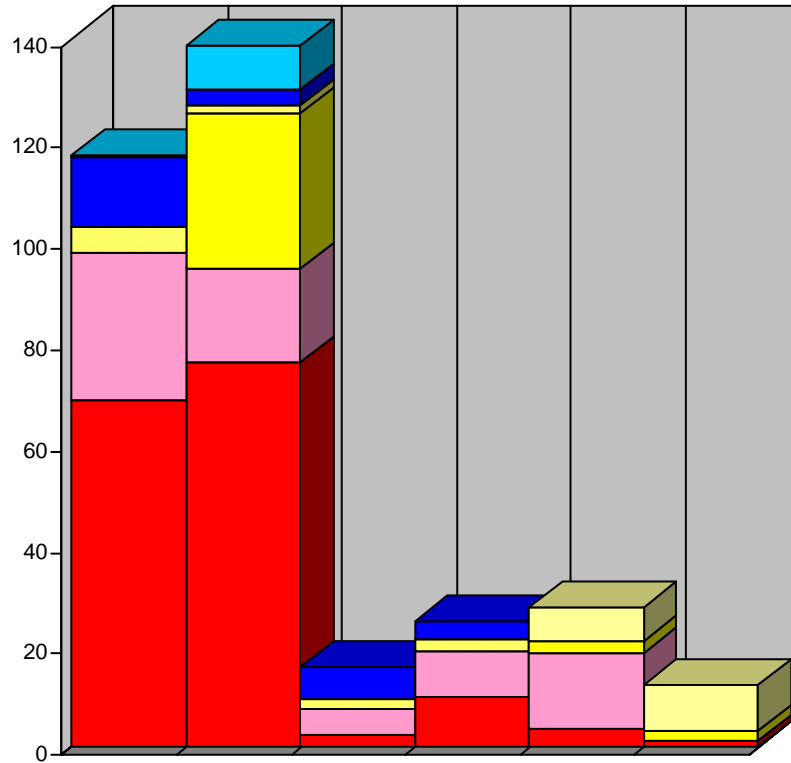
The Golf Division saw an overall decrease of 56% in material use throughout 2007, with a 93% decrease of Red materials and a 17.5% increase in Yellow materials.

Alternatives Used

While no listed Green materials were used at the Municipal Golf Course, many non-traditional materials, such as effective microorganisms, were applied experimentally toward the goal of pesticide reduction.

The Golf Course has had significant success with the application of effective microorganisms to the greens. There are many microorganisms that foster a beneficial balance in the soil and turf. The Golf Division produces it's own material by making a compost tea and applying it to the greens, and by brewing their own microorganisms which are mixed with water and applied. Promoting a beneficial micro-ecology in the soil improves nutrition, soil structure, drainage, and water retention of the root zone and makes the turf better able to fight off fungi and recover from insect damage. The Golf Division applied 6,760 gallons of material containing effective microorganisms in 2007.

Golf Division Pesticide Use



	2002	2003	2004	2005	2006	2007
PHAER						
Green Pounds						
Green Gallons						
Yellow Pounds					7	9
Yellow Gallons					2.31	1.94
Red Pounds					15	
Red Gallons					3.5	1.25
History						
Tier 4 Gallons	0.04	8.75				
Tier 4 Pound	13.7	3.13	6	3.4		
Tier 3 Gallons						
Tier 3 Pounds						
Tier 2 Gallons	5.1	1.4	1.9	2.5		
Tier 2 Pounds	0.19	30.84				
Tier 1 Gallons	28.9	18.7	5.3	9		
Tier 1 Pounds	68.8	76	2.45	10		
Totals	116.73	138.82	15.65	24.9	27.81	12.19
Percentage				Down 56%		

Airport Department Pesticide Use

The extreme dry conditions experienced in 2007 led to a 42% decrease in the amount of pesticides applied for mosquito abatement and thus a decrease of 39% in overall Airport pesticide materials applied.

Airport pesticide applications are concentrated on three types of pests: mosquitoes, rodents and weeds. The overwhelming majority of pesticides are applied to control mosquitoes. The weather cycle directly impacts production of mosquitoes and weeds.

Mosquitoes

In 2007 dry conditions limited the need for a second application of the mosquito control product Extended Release Altosid XR. Fall application was made in anticipation of a normal rainy season. Extended Release Altosid XR is activated by rainfall.

Weeds

Use of Roundup increased by 40%, while Surflan decreased by 20% in 2007. The Airport Department continues to adjust its airfield weed abatement strategy in an effort to further reduce application of pesticides. Some hand weed abatement was conducted on the airfield in 2007, however this effort is limited due to safety considerations for maintenance personnel.

Rodents

The Airport Department used two different products to control rodent populations in 2007 (Ditrac and Fumitoxin). These products were selected based on the location of the control efforts. Rodents damage airfield safety areas and attract predatory birds that pose a threat for aircraft collisions. In 2007 use of Fumitoxin dropped by 87%, while Ditrac increased by 25%. The Airport has formulated a plan for 2008 to significantly reduce the use of Ditrac.

Alternatives Used

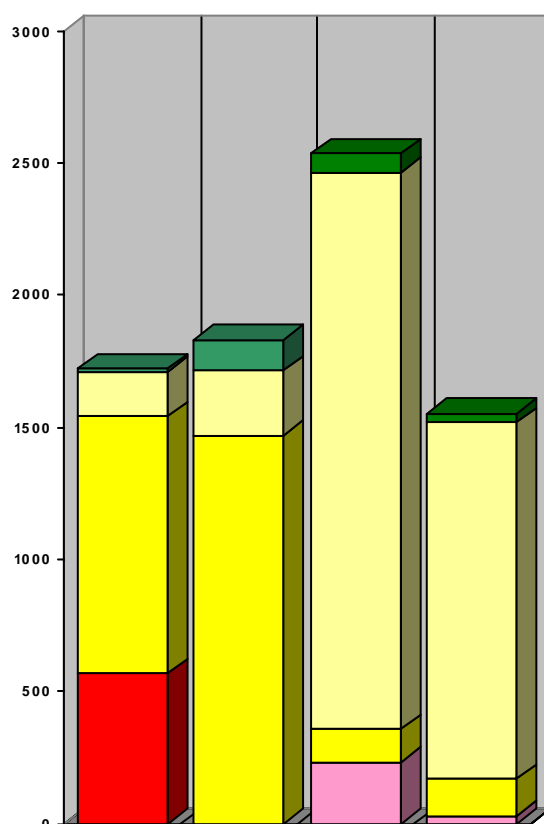
Alternative efforts focused on the control of weeds through mechanical methods, including string trimming, hand weeding and hoeing. The number of hours devoted to alternative pest control methods increased from 3,080 hours in 2006 to 14,863 hours in 2007. Most of the increase is attributable to maintenance of the new Goleta Slough native habitat restoration areas.

The Airport Department used 53 yards of mulch in planter beds to discourage weed growth during 2007. By discouraging weed growth, mulch reduces the need for mechanical or chemical weed control. Airport also applied 31 gallons of Burnout II, a green herbicide, to control weeds, but obtained no long-term control.

Infractions

Contractors working for the Airport applied 8oz of Drione (a Red material) in Airport buildings in 2007 without an exemption. The Airport regrets this error and is committed to the City of Santa Barbara's IPM Program. Adjustments have been made to contracting practices in order to avoid such oversights in the future.

Airport Pesticide Use



	2004	2005	2006	2007
PHAER				
Green Pounds			28.5	
Green Gallons			42	31.25
Yellow Pounds			2107.31	1,349.95
Yellow Gallons			125.61	140.05
Red Pounds			231.93	30.06
Red Gallons				
History				
Tier 4 Gallons				
Tier 4 Pound				
Tier 3 Gallons				
Tier 3 Pounds	12.5	115.4		
Tier 2 Gallons	170.9	247.2		
Tier 2 Pounds	972.3	1469		
Tier 1 Gallons				
Tier 1 Pounds	568			
Totals	1723.7	1831.6	2535.35	1551.31
Percentage	Down 39%			

Public Works Department Pesticide Use

The Public Works Department decreased its pesticide applications primarily due to low rainfall levels in 2007, which reduced applications of mosquito control products by the Environmental Services Division. The commonly used Green material Bti-Summit decreased by 99.99% in 2007 due to low mosquito populations. This was in contrast to last year's extremely large mosquito population which necessitated significant use of Green materials.

Applications of M-PEDE Mycogen Foam, a Yellow material, increased 254% as a result of an increased need for bee control during the early part of the year.

Alternatives Used

After April 2007, The Environmental Services Division of the Public Works Department hired a professional bee handler who routinely implements sustainable alternatives such as catch and release, as well as sealing the bees into their hives through the use of mesh wiring and plaster rather than using M-PEDE.

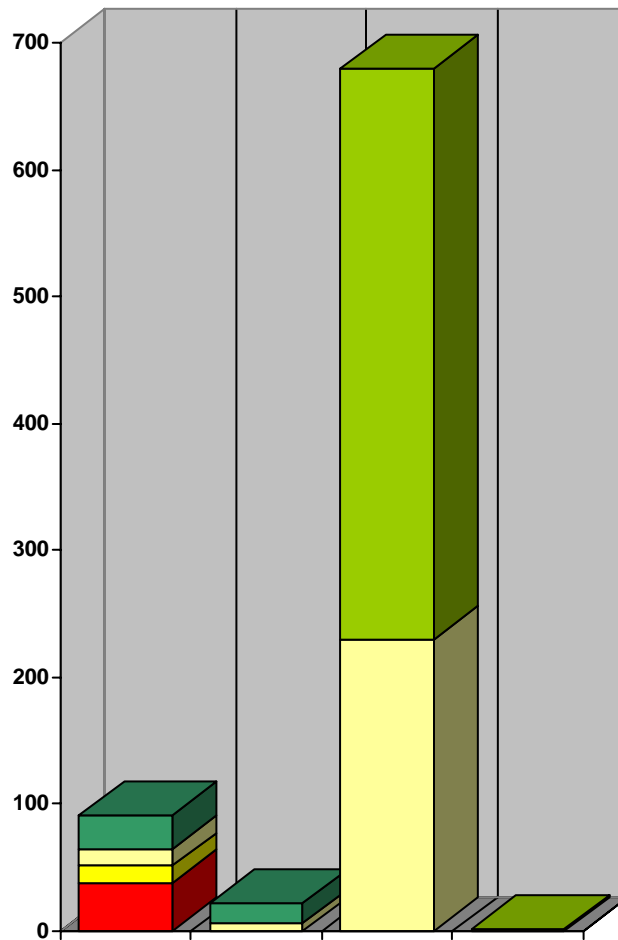
A local rodent abatement professional has been contracted to reduce the rat population while limiting the use of rodenticides. As a result, no rodenticides are currently being used along State St. and Coast Village Rd.

The Facilities Division treated active termite colonies in City buildings with heat treatment instead of fumigation and removed bee hives and relocated existing bees using a bee keeper.

Infractions

Public Works applied 36oz. of Round-up (a Yellow material) on traffic medians in 2007 without an exemption. Public Works regrets this error and is committed to the City of Santa Barbara IPM Program. Adjustments have been made to management practices in order to avoid such oversights in the future.

Public Works Pesticide Use



	2004	2005	2006	2007
PHAER				
Green Pounds				.5
Green Gallons			450.55	
Yellow Pounds				
Yellow Gallons			228.6	1.38
Red Pounds			0.31	
Red Gallons				
History				
Tier 4 Gallons				
Tier 4 Pound				
Tier 3 Gallons				
Tier 3 Pounds	27	15.16		
Tier 2 Gallons	13	6.625		
Tier 2 Pounds	14	0.031		
Tier 1 Gallons				
Tier 1 Pounds	37			
Totals	91	21.816	679.46	1.88
Percentage	Down 99%			

V. EXEMPTIONS

Under the IPM Strategy and PHAER Zone system, exemptions may be granted when a pest outbreak poses an immediate threat to public health or will result in significant economic or environmental damage from failure to use a pesticide on the *Phased-Out Pesticide List* or in a designated zone that would otherwise prohibit it. Exemptions may be requested for one time application or as a programmatic exemption for a single year. The exemption process is outlined in the IPM Strategy.

- 13 exemptions were requested in 2007 as summarized in the table to the right and as listed in the table below.
- 2 exemptions were requested for emergency action and were granted by the IPM Coordinator.
- 11 requests were for planned action and were granted by the IPM Citizens Advisory Committee.
- Of the 13 requests approved, 8 (or 62%) were not applied.

Exemption Summary Table

2007 Exemptions	Airport	Creeks	Golf	Parks	Waterfront	Totals
Emergency			2			2
Proposed	1	1	5	3	1	11
Passed	1	1	5	3	1	11
Denied						
Applied	1		3		1	5
Not Applied		1	4	3		8

Exemption Detail Table

Vote	Dept. / Div.	Material	Type	Type	Pest	Exemption Type	Used	Site
Passed	Airport	Fumitoxin	Rodenticide		Rodents	One time	Yes	Airfield
Passed	Golf	Banner-maxx	Fungicide		Fungus	Programatic	No	Greens
Passed	Golf	Daconil	Fungicide		Fungus	Programatic	No	Greens
Passed	Golf	Heritage	Fungicide		Fungus	Programatic	No	Greens
Passed	Golf	Medallion	Fungicide		Fungus	Programatic	Yes	Greens
Emergency	Golf	Merit	Insecticide		Insects	One time	Yes	Greens
Passed	Golf	Prostar	Fungicide		Fungus	Programatic	No	Greens
Emergency	Golf	Scimitar	Insecticide		Insects	One time	Yes	Greens
Passed	Parks	Altocid	Insecticide		Mosquitos	Programatic	No	Andree Clark Bird Refuge
Passed	Parks	Glyphosate	Herbicide		Weeds	Programatic	No	Alick Keck Park Memorial Gardens
Passed	Parks	Glyphosate	Herbicide		Weeds	One time	No	Vera Cruz Park
Passed	Creeks	Glyphosate	Herbicide		Weeds	Programatic	No	Arroyo Burro Creek at Las Positas
Passed	Waterfront	Ditrac	Rodenticide		Rodents	Programatic	Yes	Wharf and marinas

Comparison of Exemptions for 2006 and 2007

	2006	2007
Number of Exemption Requests	12	13
Number of Exemption Requests Approved	12	13
Number of Approved Exemption Requests Applied	9	5

The number of exemptions applied for in 2007 increased by 8%. However, those exemptions that were granted but not used increased from 25% in 2006 to 62% in 2007. This was due in part to Departments attempting new alternative controls prior to using the exemptions.

VI. ALTERNATIVE PEST MANAGEMENT PRACTICES USED IN 2007

Non-chemical pest management alternatives used in 2007 are reviewed in the table below. The use of non-chemical IPM alternatives was emphasized over pesticide applications. Hours reported for the total year are from the *Monthly Alternative Use Reports* prepared by each Department. A check (✓) indicates the alternative was used but time was not tracked for it. The total tracked hours for City-wide alternative practices rose 147% from 11,004.5 in 2006 to 27,241 in 2007.

PEST	Alternative	Airport Hours	Golf Hours	Public Works Hours	Parks Hours	Citywide Hours
WEEDS	Mulch & wood chips	33	150	12	2,375	2570
	Weed fabric				75	75
	Propane flame weeder				115	115
	Hot water/ steam				18	18
	Hand weeding	13,386.5	16		1,380	14,782.5
	Weed whip	818	810	2,130	2,453	6211
	Habitat modification	39.5	332	✓	655	1026.5
	Irrigation Mgmt.	527	490		✓	1,017
	Host plants squeeze out					
PLANT PESTS	Irrigation Mgmt.				✓	
	Compost tea/microbial in.		16		221	237
	Enhance plant health	✓	40		✓	40
	Worm castings				✓	
	Effective micro-organisms		36		✓	36
	Wash off plants	✓	✓		✓	
	Resistant varieties				✓	
	Remove plant/tree	✓		4	✓	4
GOPHERS	Traps	31	✓	✓	550	581
SQUIRRELS	EPA exempt bait				80	80
	Traps				420	420
RATS & MICE	Mechanical traps	28	✓	✓	✓	28
	Cat				✓	
MOSQUITOES	Mosquito fish					
	Remove stagnant water				✓	
BEES, WASPS, etc.	Bee Keepers				✓	
	Remove hives				✓	
OTHER	Glue traps/roaches				✓	
	Heat Treatment			✓		
Total Hours		14,863	1,890	2,146	8,342	27,241

Physical modifications to parks

One of the main thrusts of the PHAER Zone system is the physical modification of Yellow areas to make them maintainable as Green, and the modification of Green areas to make them more sustainable. One of the most effective physical modifications is the installation of concrete curbs between turf areas and planter areas which inhibits the grass from creeping into the landscaped beds. The Parks and Recreation Department completed a number of such projects in 2006 and 2007 using City Council-provided funds as well as grant funds. More are planned for 2008.

Completed Projects for 2006 and 2007

Site	Work	Cost
Alameda Park	630' of curbing around palm garden	\$10,591.50
Alice Keck Park Memorial Gardens	859' of curbing around planters and soil exchange	\$17,406.02
Chase Palm Park	530' of curbing around planters and along turf edge	\$12,178.50
Dwight Murphy Ball Field	1,350' of curbing under fences around fields	\$63,950.00
MacKenzie Park	965' of curbing along turf edge	\$16,837.00
Orpet Park	915' of curbing around planters	\$13,630.50
San Roqué Circle	117' of curbing around planters	\$2,905.50
Shoreline Park	321' of curbing along main picnic area	\$5,945.50
	Total	\$143,444.52

Of the parks listed above, Dwight Murphy Ball Field, MacKenzie Park, Orpet Park, and San Roqué Circle previously had a total of 4.18 acres that were listed as Yellow. Because of these modifications, this Yellow acreage has been reduced by 2.22 acres, with Dwight Murphy Ball Field and San Roqué Circle now being managed as completely Green.

Alameda Park, Alice Keck Park Memorial Gardens, Chase Palm Park, and Shoreline Park are already managed as Green. In these cases, the curbing was added to make the Green status more sustainable.

Planned Projects for 2008

Site	Work	Cost
A.C. Postel Memorial Rose Garden	Concrete curbs along turf edge bordering Ruins	\$20,000.00
Alameda Park	Concrete curbs around picnic area and planter	\$5,000.00
Alice Keck Park Memorial Gardens	Concrete curbs around planters	\$15,000.00
Hidden Valley Park	Concrete curbs along turf edge of upper lawn	\$5,000.00
Hilda Ray Park	Concrete curbs along parking lot	\$4,000.00
La Mesa Park	Concrete curbs along turf edge and parking lot	\$44,500.00
	Total	\$101,000.00

Of the planned projects listed above, the plans for Alice Keck Park Memorial Gardens and Alameda Park continue the work done in previous years. These projects are large in scope and, in order to manage available funds and keep the park usable, must be split up.

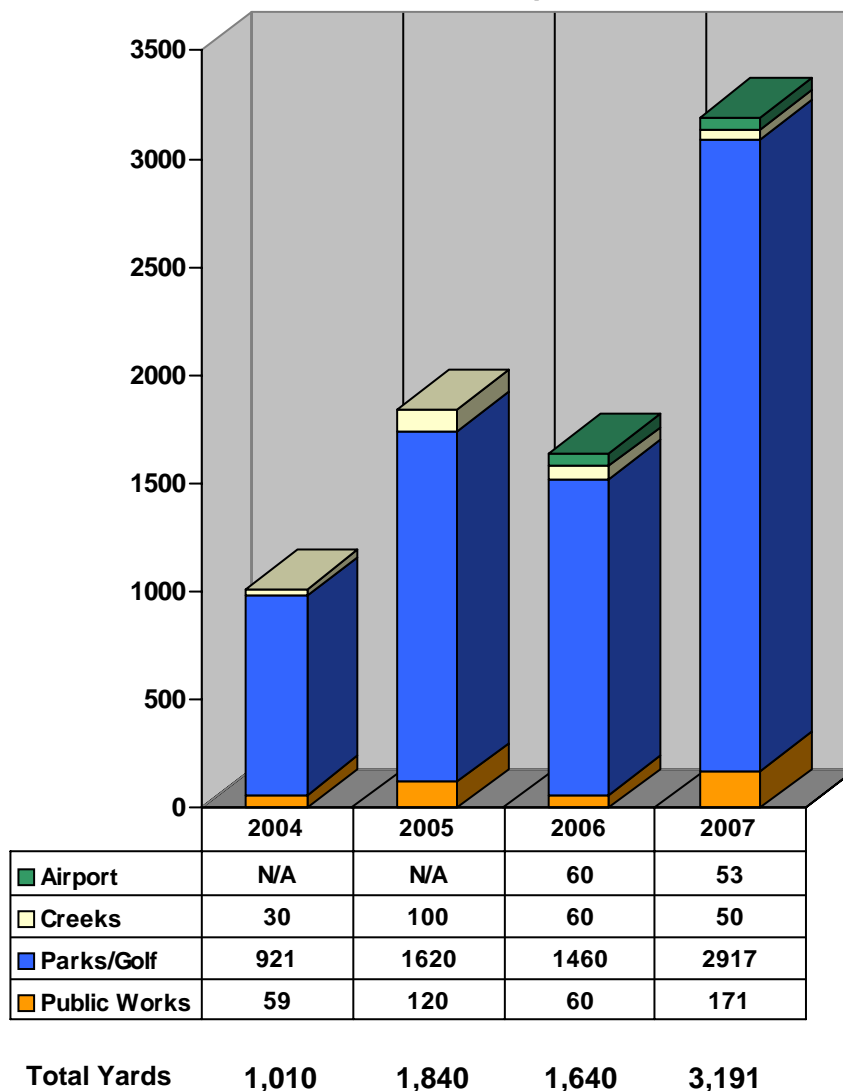
Total Mulch Use

Mulch has been found to be effective in suppressing the growth of annual weeds. The table below shows the types of mulch applied for 2007.

Mulch Use Table

Yards of Mulch by Type	Airport	Creeks	Parks/Golf	Public Works	City Totals
Biosolids			17		17
Woodchips	53	50	2,900	171	3,174
Total Yards					3,191

Mulch Use Comparison Chart



VII. EFFECTIVENESS OF ALTERNATIVE PRACTICES IMPLEMENTED

In general, the majority of alternative practices are more labor intensive and costly, and not as effective as Yellow and Red classified pesticides. However, there are occasions when a Yellow or Red material is also not effective in controlling a pest problem. While most Green materials and practices provide only moderate control of pest populations, there have been some successes. The effectiveness of alternatives for the biggest pest problems encountered is reviewed below.

- **Weeds:** A variety of alternatives are used to provide moderate effectiveness and control including: weeding, weed whipping, mulching, mowing, flame torch (in designated safe areas), and the Aquacide Steam Weeder. These alternatives are significantly more labor and cost intensive and not as effective as Yellow materials. Alternative food grade or EPA exempt chemicals, such as the clove oil based Burnout II, have not proven effective.
- **Insects / Mollusks:** Results are mixed for combating insects and mollusks. For some insects, there are no known effective alternatives. Some alternatives can be very effective but expensive, such as removing non-resistant plants and replacing them with resistant varieties. However, the following alternatives have proven successful against insects and mollusks:
 - Sluggo for snails and slugs
 - Worm castings for white fly
 - Insecticidal soap for aphids
 - Neem oil as a dormant spray
 - Bti for mosquitoes
- **Disease:** No effective alternative has been found for most diseases. Where possible, staff focuses on preventative treatments to enhance plant health. Once disease strikes, pesticides are generally required to combat it.
- **Gophers:** For the most part, mechanical traps are being used City-wide. Traps have been found to be moderately effective and are more expensive than rodenticides due to higher costs of purchasing, installing, monitoring, and cleaning out traps.
- **Ground Squirrels:** Mechanical trapping, using snap and electrical traps, is the primary method of control at this time. This method is moderately effective at controlling populations. More effective alternatives are being researched. Some control has been achieved using food grade baits. Both trapping and baiting have proven very labor intensive.
- **Mice / Rats:** At this time, traps are the primary way of controlling this population. Traps have been found to be moderately effective depending on population size and location and available food sources. Positive public perception seems to far outweigh the costs of using traps. Traps have also shown themselves to be very effective in controlling rodents on Downtown State Street and at Coast Village Road
- **Termites:** Building Maintenance now only uses heat treatments to control drywood termites. Heat was found to be equally effective as pesticides and without the chemical residues. However, costs are 50% higher at this time.

VIII. PROPOSED CHANGES TO PEST MANAGEMENT PRACTICES

Alternative Practices Proposed for 2008

In 2008, Departments will continue to seek “least toxic” alternatives that provide higher benefit to cost ratios. Departments will also continue to use alternatives found effective in the past four years unless more cost-effective alternatives are found. Departments propose the following for 2008:

- Parks will continue to implement the PHAER Zone model of integrated pest management and continue to modify parks for sustainable maintenance. Modifications are planned at Alice Keck Park Memorial Gardens, Alameda Park, La Mesa Park, The A.C. Postel Memorial Rose Garden, Hidden Valley Parks, and Hilda Ray Park.
- Golf will continue to refine and develop organic approaches and monitor turf energy levels, apply compost-tea to greens and pursue other Green alternatives.
- Airport will standardize least toxic approaches for combating specific pests and will refine their strategy for controlling weeds on the airfield.
- The IPM Strategy is being updated to include the PHAER Zone Model of material and site classification.

IX. CONCLUSION

The City saw a significant reduction in pesticide use in 2007. A record dry year enabled a drop in pesticide use due to diminished weed and mosquito populations. The City experienced a 51% overall decrease in pesticide use. This includes an 87% decrease in the use of Red materials. The use of Yellow materials also decreased 39% and the use of Green materials decreased 92%.

It is critical for City staff to continue to find low risk, cost effective, viable alternatives so that pesticide hazards may be reduced further and the overall efficiency of IPM practices may increase. To do so, staff support is needed for IPM training with regional IPM groups, and for research on the use and effectiveness of alternative materials and methods.

Also critical to reducing pesticide hazards in the City of Santa Barbara is the continuation of community outreach and public education. Because of this community outreach, the public will become more aware of the City's greater reliance upon low risk IPM alternatives.

X. ATTACHMENTS

ATTACHMENT A: APPROVED MATERIALS LIST

Product Name	Active Ingredient	ZONE	Tier	Type
Advance Ant Bait	Orthoboric Acid	Green	3	Insecticide
AllDown	citric acid, acetic acid, garlic	Green	3	Herbicide
Avert Cockroach Bait Station	Abamectin B1 0.05%	Green	3	Insecticide
Avert Cockroach Gel Bait	Abamectin B1 0.05%	Green	3	Insecticide
Bactimos Pellets	Bt	Green	3	Insecticide
Bactimos Wettable	Bt	Green	3	Insecticide
Bio-Weed	corn gluten	Green	3	Herbicide
Borid	Orthoboric Acid	Green	3	Insecticide
Borid Turbo	Orthoboric Acid	Green	3	Insecticide
BurnOut 2	clove oil	Green	3	Herbicide
Cinnamite	cinnamaldehyde	Green	3	Insect/Fung
Dipel Flowable	Bt	Green	3	Insecticide
Drax Ant Kill PF	Orthoboric Acid	Green	3	Insecticide
EcoExempt	Wintergreen Oil	Green	3	Herbicide
EcoExempt D	2-Phenethyl propionate 4.5% Eugenol (clove oil) 1.75%	Green	3	Insecticide
Embark	mefluidide	Green	3	Growth Regulator
GreenErgy	Citric, Acetic Acid	Green	3	Herbicide
Kaligreen	potassium bicarbonate	Green	3	Fungicide
Matran (EPA Registration Exempt)	clove oil	Green	3	Herbicide
Natura Weed-A-Tak	clove oil	Green	3	Herbicide
Niban	Isoboric Acid 5%	Green	3	Insecticide
Safer Soap	potassium salts of fatty acids	Green	3	Insecticide
Sluggo	iron phosphate	Green	3	Other
Summit BTI Briquets	Bt	Green	3	Insecticide
Teknar HP-D	Bti	Green	3	Insecticide
Terro II	Orthoboric Acid	Green	3	Insecticide
Vectobac G	Btk	Green	3	Insecticide
VectoLex CG	bacillus sphaericus	Green	3	Insecticide
Victor Wasp and Hornet Killer	Mint Oil 8% & Sodium Lauryl Sulfate 1%	Green	3	Insecticide
Agnique MMF	POE Isoocatadecanol	Yellow	2	Insecticide
Aliette	fosetyl aluminum	Yellow	2	Fungicide
Altosid B	methoprene	Yellow	2	Other
Altosid L	methoprene	Yellow	2	Other
Altosid P	methoprene	Yellow	2	Other
Altosid XR	methoprene	Yellow	2	Other
Aquamaster-Rodeo	glyphosate	Yellow	2	Herbicide

Product Name	Active Ingredient	ZONE	Tier	Type
Avid	abamectin	Yellow	2	Miticide/Insecticide
Dormant	petroleum oil	Yellow	2	Insecticide
Green Light	Neem oil	Yellow	2	Insecticide/Fungicide
M-PEDE	potassium salts of fatty acids	Yellow	2	Insecticide
Prostar 70 WP	flutolanil	Yellow	2	Fungicide
Rose Defense	Neem oil	Yellow	2	Insect/Fung
Roundup Pro	glyphosate	Yellow	2	Herbicide
Safticide Oil	petroleum oil	Yellow	2	Insecticide
Stylect Oil	Petroleum distillates	Yellow	2	Insecticide
Sulf-R-Spray	Parafin oil, sulfur	Yellow	2	Fungicide
Superior Spray Oil	petroleum distillates	Yellow	2	Insecticide
Surflan	oryzalin	Yellow	2	Herbicide
Surflan AS	oryzalin	Yellow	2	Herbicide
Termidor SC	Fipronil	Yellow	2	Insecticide
Triact	Neem oil	Yellow	2	Insecticide/Fungicide
Trilogy	Neem oil	Yellow	2	Insecticide/Fungicide
Wasp-Freeze	allethrin	Yellow	2	Insecticide
Wilco Ground Squirrel Bait	diphacinone	Yellow	2	Other
XL 2G	benefin; oryzalin	Yellow	2	Herbicide
<i>All Special Circumstance materials will continue to require exemptions granted by the IPM Advisory Committee, as provided in the City of Santa Barbara IPM Strategy</i>				
Bayleton	triadimafon triazole	S. C.	1	Fungicide
Conserve	spinosad	S. C.	1	Insecticide
Fumitoxin	Aluminum phosphide	S. C.	1	Rodenticide
Manage	halosulfuron methyl	S. C.	1	Herbicide
Medallion	fludioxonil	S. C.	4	Fungicide
Quick Pro	glyphosate/diquat	S. C.	1	Herbicide
Reward	diquat dibromide	S. C.	1	Herbicide
Rubigan	fenarimol	S. C.	1	Fungicide
Rubigan EC	fenarimol	S. C.	1	Fungicide
Subdue	metalaxyl	S. C.	1	Fungicide
Zp Rode	zinc phosphide	S. C.	1	Rodenticide

* Some previously approved materials have been removed from this list at the discretion of the IPM Coordinator.